

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2004/000594

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. ⁷: H01L 21/68

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please see the Supplemental Box 2.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 231 673 B1 (MAEDA) 15 May 2001 Whole document	1-65
A	WO 2002/045143 A1 (AUSTRALIAN NATIONAL UNIVERSITY) 6 June 2002 Whole document	1-65
P,A	US 6 655 045 B2 (CHEUNG et al.) 2 December 2003 Whole document	1-18
A	US 6 106 222 A (TSUJI et al.) 22 August 2000 Whole document	19-36

☒ Further documents are listed in the continuation of Box C☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search
30 July 2004Date of mailing of the international search report
- 4 AUG 2004Name and mailing address of the ISA/AU
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International application No.
PCT/AU2004/000594**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please see the Supplemental Box 1.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☒ No protest accompanied the payment of additional search fees.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 443 652 A (IZU et al.) 17 April 1984 Whole document	37-44
A	EP 0 111 394 A2 (ENERGY CONVERSION DEVICES, INC.) 20 June 1984 Whole document	37-44
A	US 4 617 420 A (DILTS et al.) 14 October 1986 Whole document	45-62
A	WO 2000/077860 A2 (POWERTILE LTD) 21 December 2000 Whole document	63-

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Supplemental Box 2

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of

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B. FIELDS SEARCHED

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DWPI:

(wafer or substrate) (s) (silicon or si or semiconductor)

/ic b65h-005/08 or b65g-049/06 or b65g-049/07 or b65h-003/64 or b65g-015/46 or
h05k-001/18 or h05k-003/30 or h05k-003/32 or b28d-005

/ic h011-021/301 or h011-021/302 or h011-021/304

/ic h011-021/304 or h011-021/301 or h011-021/68 or h011-025/04 or h011-021/98 or
h011-021/58 or h011-031/042 or h011-031/05 or h011-031/0352

/ic h011-021/68

adhe+ or bond+ or attach+

array or pattern or assembl+ or align+ or orient+

assembl+ or align+ or orient+

belt or convey?r or tape

castell+ or notch+ or cavit+

conduct+ or +connect+

face? or surface

mov+ or position+ or displac+

mov+ or position+ or displac+ or transport+ or transfer+

separat+ or remov+ or detach+

strip or strips or tile? or tiling

strip or strips or wall?

surface

vacuum or suction or chuck

Supplemental Box 1

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: III

The international application does not comply with the requirement of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a general inventive concept. In coming to this conclusion the International Searching Authority has found that there are at least three inventions as indicated against the nine independent claims below:

Claim 1: A method of separating strips comprising applying vacuum, and displacing the wafer.

Claim 10: An apparatus for separating strips comprising a vacuum source, and a displacement means.

Claim 19: A method of assembling strips comprising receiving a strip on a belt, moving the belt, repeating the sequence.

Claim 28: An apparatus for assembling strips comprising a belt, a motor and a controller.

Claim 37: A method of assembling strips comprising applying adhesive material, applying vacuum to maintain the strips in an array, transferring the strips, ceasing the vacuum.

Claim 41: An apparatus for assembling an array of strips comprising a means to apply an adhesive, a means to apply vacuum, a means for transferring, a means to cease applying vacuum.

Claim 45: An apparatus for assembling an array of strips comprising separating a strip, displacing the wafer, receiving strip on a belt, moving the belt, repeating the sequence.

Claim 54: A system of assembling an array of strips comprising a vacuum source, a displacement means, a belt, a motor and a controller.

Claim 63: A device comprising a substrate, an array of strips and an adhesive material.

The features common to these claims have been disclosed in WO 02/45143 discussed in the application. There appear to be at least three special technical features contained in the above claims: (1) a vacuum source and associated displacement means, (2) belt, motor and controller, and (3) adhesive means on the substrate. These technical features appear to be present in various combinations (along with other features) in the above claims. Consequently there are three inventions in the present application. The requirement of unity of invention is not satisfied *a posteriori*.

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Information on patent family members

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This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
US 6231673	JP 2000211993	US 2001010112	
WO 0245143	AU 20348/02	CA 2432300	EP 1342259
	US 2004097012	WO 03047004	
US 6655045	CN 1376623	EP 1244137	JP 2002289672
	US 2002133971		
US 6106222	EP 0798955	JP 9270453	US 6464444
US 4443652	CA 1192292	EP 0112028	JP 59099779
EP 0111394	AU 20950/83	BR 8306142	ES 8503890
	JP 59099778		
US 4617420			
WO 0077860	AU 55423/00	EP 1190456	ZA 200109802
Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.			
END OF ANNEX			